

Stress for a stressed out heart: Classic cardiac PET findings in takotsubo cardiomyopathy

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A 77-year-old woman with ASD repair, permanent atrial fibrillation, AV node ablation with dual chamber pacemaker, type 2 diabetes mellitus, and recent stroke presented with 2 days of substernal chest pain. Cardiac markers were elevated with peak troponin T of 1.01 ng/mL and CK-MB of 12 ng/mL with no acute EKG changes (Figure 1A). An echocardiogram demonstrated newly depressed ejection fraction of 36% and severe apical hypokinesis (Figure 1B, C). Given her recent stroke, contrast allergy, and resolution of chest pain, an initial non-invasive strategy was pursued with cardiac PET with Rubidium⁸² and F¹⁸DG for myocardial viability.

Relative perfusion demonstrated a mild resting apical defect, which worsened after regadenoson in the apex and mid-ventricular segments. Quantitative myocardial flow reserve demonstrated low normal resting flows with reduced stress and reserve myocardial blood flows, worse in the left anterior descending artery

(LAD) territory (Figure 1D-F). Gated imaging showed a stress ejection fraction of 32% with severe apical hypokinesis. F¹⁸DG images (bottom row G) showed absent uptake in the apex, extending into the adjacent mid-myocardial segments.

Catheterization excluded coronary disease (Figure 1H-I) and ventriculogram demonstrated apical ballooning (Figure 1J, K). These findings are consistent with takotsubo cardiomyopathy, a transient stress-induced disease process. Previous studies have reported a reverse perfusion-metabolism pattern in takotsubo, attributed to myocardial stunning with impairment in insulin and glucose metabolism.^{1,2} We report a similar pattern with mildly abnormal resting perfusion but absent “unmatched” FDG uptake in the segments with wall motion abnormalities and abnormal stress-induced myocardial blood flow. These findings are compatible with takotsubo cardiomyopathy.

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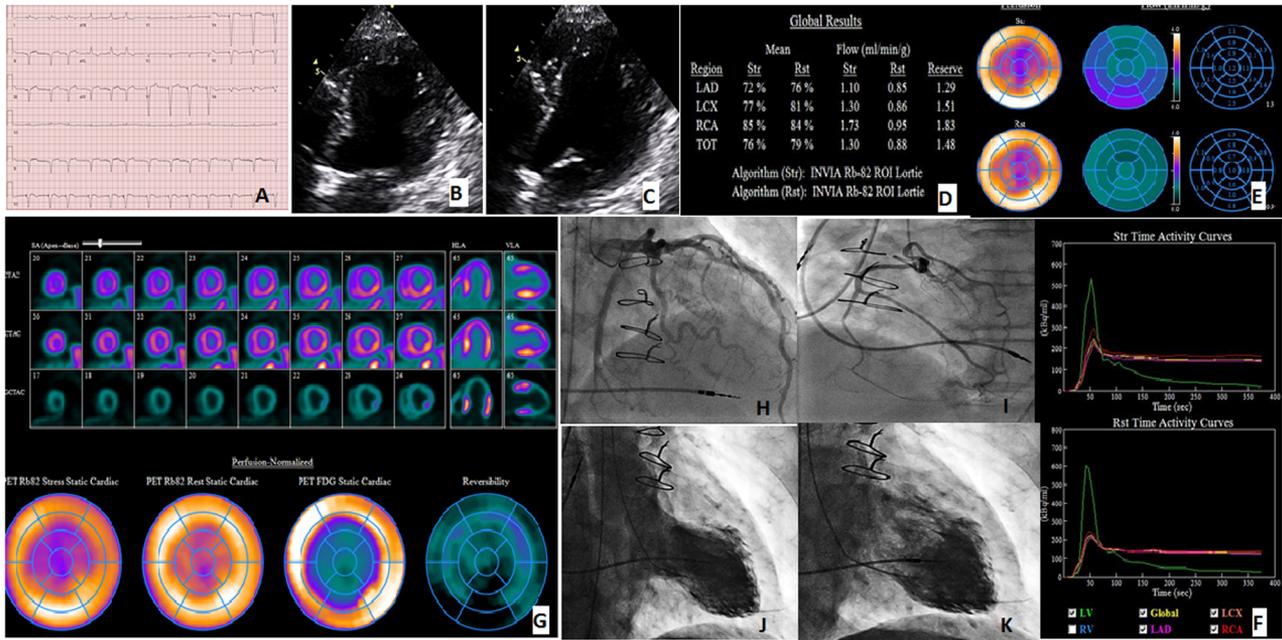


Figure 1. (A) EKG; (B) Apical 4 chamber view on transthoracic echo end systole; (C) Apical 4 chamber view on transthoracic echo end diastole; (D) myocardial blood flow; (E-G) Cardiac PET; (H-K) angiogram and ventriculogram; (F) Time activity curves.

Disclosure

The authors have no relevant disclosures.

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